

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

Claims 1, 4, 5, 12, 19-22, 24-29, 33, 35-40, 49-61, and 63 are pending. Claims 22, 24-29, 33, and 35-40 were previously withdrawn. Claims 2-3, 6-11, 13-18, 23, 30-32, 34, and 41-48 were previously canceled. Claim 62 is canceled by this Amendment. Claims 1, 4, 5, 12, 19-21, 49-61, and 63 are amended. Support for amended claims 1, 4, 5, 12, 19-21, 49-61, and 63 is found in the previously presented claims. Thus, no new subject matter is added.

The Office Action rejected claims 1, 4, 5, 12, 19, 21, and 49-62 as unpatentable under 35 U.S.C. § 103(a) over Stachowiak (U.S. Publication No. 2003/0170466) in view of Lingle (U.S. 6,445,503). The Office Action rejected claim 20 as unpatentable under 35 U.S.C. § 103(a) over Stachowiak in view of Lingle and Szczyrbowski et al. (U.S. 5,279,722). The Office Action finally rejected claim 63 as unpatentable under 35 U.S.C. § 103(a) over Stachowiak in view of Lingle and Farmer et al. (U.S. 4,973,511).

Amended claim 1 recites a method for producing a glazing having a multilayer coating deposited on a glass substrate by sputtering at reduced pressure. The method includes depositing a first transparent dielectric layer, then depositing a functional Ag-based infrared reflective layer, and depositing on the Ag-based layer a first protective layer in an atmosphere containing a maximum of 20% oxygen with a maximum thickness of 3 nm and composed of a material having an electronegativity difference from oxygen less than 1.9 and less than that of the Ag-based layer. Adjacent the first protective layer, a second protective layer is deposited in an atmosphere containing a maximum of 20% oxygen with a maximum thickness of 7 nm and composed of a material having an electronegativity difference from oxygen greater than 1.4. Finally, a second transparent dielectric layer is deposited.

This claimed process of forming a coating having two adjoining protective layers above the silver layer having specific electronegativity values with respect to oxygen results

in a coating that protects the silver layer from oxidation during formation of the coating and during thermal heat treatment of the glazing. None of the cited references suggest the claimed method.

The Office Action relies primarily on Stachowiak as disclosing a coating formed by depositing a first dielectric layer, a silver layer, a first protective layer less than 3 nm thick (e.g., NiCrO_x), a second layer less than 7 nm thick (e.g. TiO_x), and a second dielectric layer. Notably, cited paragraph 45 of Stachowiak discloses that the TiO_x dielectric layers have a wide thickness ranging from 10-900 Å, and is concerned with changing the index of refraction from the bottom to the top dielectric layers in the system. Stachowiak does not disclose or suggest that the TiO_x layer is a protective layer. While acknowledging that Stachiowak permits sub-stoichiometric TiO_x, a primary purpose of the specifically disclosed indices of refraction for the dielectric layers is to “enable increased visible transmission” (¶ 0045). See also ¶ 0004. A person of ordinary skill in the art would know that the higher the oxidation level of the TiO_x layer, the higher the visible transmission. Thus, the person of ordinary skill in the art would be motivated to form the TiO_x layer of Stachowiak in an atmosphere having a relatively high oxygen content, unlike the claimed method which recites a very low oxygen content for the second protective layer of no more than 20%.

The Office Action recognizes that Stachowiak does not disclose that the protective layers are deposited in an atmosphere of no more than 20% oxygen. The Office Action instead relies on Lingle for the disclosure of these features, and asserts that it would have been obvious to combine Lingle with Stachowiak to allow for a heat treatable layer system. More specifically, the Office Action cites to a TiO_x layer formed in less than 20% oxygen in Lingle Table III that is below the silver layer. Like Stachiowiak, Lingle teaches only a single protective layer above the silver layer. Lingle does not disclose or suggest two protective layers as claimed above the silver layer. More particularly, Lingle does not disclose or

suggest forming a TiOx layer above the first protective NiCrOx layer which is in turn formed above the silver layer. Applicants respectfully submit that a person of ordinary skill in the art following the teaching of Lingle would deposit a TiOx layer below the silver layer in Stachowiak, and not above the first protective layer as presently claimed. Similarly, Lingle provides no reason for a person of ordinary skill in the art to form the TiOx layer of Stachowiak in an atmosphere of less than 20% oxygen. In fact, Lingle teaches that the oxide layer above the protective NiCrOx layer is formed in 50% oxygen. See Lingle Table III. In short, the combination of Stachowiak and Lingle provides no reason for a person of ordinary skill in the art to apply the claimed method of depositing two protective layers in a low oxygen atmosphere above a silver layer as claimed.

With respect to claim 63, which recites forming the TiOx layer in an atmosphere of no more than 10% oxygen, the Office Action relies on Farmer et al. Specifically, the Office Action relies on Farmer et al.'s disclosure of the first portion of a deposition of WO₃ above a silver layer in a low oxygen atmosphere. However, Farmer et al. includes no disclosure or suggestion of forming a second protective layer above the first protective layer in a low oxygen atmosphere as claimed. Farmer et al. also discloses forming a layer system on a plastic substrate such as PET and thus cannot be heat treated as in the glass based coating of the present invention. Thus, Farmer et al. also does not render obvious claims 1 or 63.

Accordingly, Stachowiak, Lingle, and Farmer et al. do not disclose or suggest the features of independent claim 1. It is submitted that independent claim 1, and dependent claims 4, 5, 12, 19-21, 49-61, and 63 which depend on claim 1, are in condition for allowance.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal

Application No. 10/517,868
Reply to Office Action of February 25, 2009

allowance. Therefore, a Notice of Allowance for claims 1, 4, 5, 12, 19-21, 49-61, and 63 is earnestly solicited.

It is respectfully submitted that the present application is in condition for allowance, and a favorable decision to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Andrew M. Ollis

Andrew M. Ollis
Attorney of Record
Registration No. 40,749

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)